

WHAT IS CLAIMED IS:

1. A semiconductor laser device including, on a GaAs substrate, at least a first-conductive-type lower cladding layer, a lower guide layer, a quantum well active layer
5 composed of at least one well layer and at least two barrier layers, an upper guide layer and a second-conductive-type upper cladding layer, one on another, wherein
at least one layer out of the plurality of layers
10 is a P-based layer formed of group III-V compound semiconductor containing P as a group V element, and a layer adjoining this P-based layer is an As-based layer formed of group III-V compound semiconductor containing not P but As as a group V element, and
15 roughness of an interface between the P-based layer and the As-based layer is not more than 20Å.
2. The semiconductor laser device according to Claim 1, wherein the interface between the P-based layer and the
20 As-based layer is disposed between the upper cladding layer and the lower cladding layer.
3. The semiconductor laser device according to Claim 1, wherein the P-based layer is formed of InGaAsP, InGaP,
25 GaAsP or AlGaInP.

4. The semiconductor laser device according to Claim
1, wherein the As-based layer is formed of GaAs, AlGaAs,
AlAs, InGaAs or AlGaInAs.
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5. The semiconductor laser device according to Claim
1, wherein the well layer is the P-based layer.
6. The semiconductor laser device according to Claim
1, wherein the barrier layer is the P-based layer.
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7. The semiconductor laser device according to Claim
1, wherein both the well layer and the barrier layers are
P-based layers and both the upper guide layer and the lower
guide layer are As-based layers.
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8. The semiconductor laser device according to Claim
7, wherein both the well layer and the barrier layers are
formed of InGaAsP and both the upper guide layer and the
lower guide layer in adjacency to the barrier layers are
formed of AlGaAs.
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9. The semiconductor laser device according to Claim
8, wherein Al composition ratio in the group III of the

upper guide layer and the lower guide layer is not less than 0.20.

10. The semiconductor laser device according to Claim
5 1, wherein emission wavelength is not less than 760 nm and not more than 800 nm.

11. A method for manufacturing a semiconductor laser
device including, on a GaAs substrate, at least a first-
10 conductive-type lower cladding layer, a lower guide layer, a quantum well active layer composed of at least one well layer and at least two barrier layers, an upper guide layer and a second-conductive-type upper cladding layer, one on another, wherein

15 at least one layer out of the plurality of layers is a P-based layer formed of group III-V compound semiconductor containing P as a group V element, the method comprising the steps of:

 subjecting the P-based layer to crystal growth at
20 a first growth temperature; and

 above the P-based layer, starting growth of an As-based layer formed of group III-V compound semiconductor containing not P but As as a group V element at a growth temperature approximately equal to the first growth

temperature, and thereafter furthering the growth while elevating the temperature to a second growth temperature.

12. The method for manufacturing a semiconductor
5 laser device according to Claim 11, further comprising the
step of: before the growth of the As-based layer, making
one layer or a plurality of layers of other As-based layer
grown just above the P-based layer at a temperature
approximately equal to the first growth temperature.

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13. The method for manufacturing a semiconductor
laser device according to Claim 11, wherein the first
growth temperature is not less than 600°C and not more than
680°C.

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14. The method for manufacturing a semiconductor
laser device according to Claim 11, wherein the second
growth temperature is not less than 700°C and not more than
780°C.

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15. The method for manufacturing a semiconductor
laser device according to Claim 11, wherein the P-based
layer is formed of InGaAsP, InGaP, GaAsP or AlGaInP.

16. The semiconductor laser device according to Claim 1, wherein the As-based layer is formed of GaAs, AlGaAs, AlAs, InGaAs or AlGaInAs.

17. An optical disc reproducing and recording
5 apparatus which uses the semiconductor laser device as defined in Claim 1.